

received 8/17/12

AQR Policy 1.1.1 Prime Aquifer Recharge Protection

The County shall limit impervious surface area within areas of prime aquifer recharge ([FLUM Series Map #6](#)) to ten percent, thereby allowing for the greatest amount of water to infiltrate the ground. Allowable uses include rural residential development and agricultural and resource conservation activities. Group III Excavations are prohibited.

As stated in the Charlotte County 2050 Plan the ultimate goal of AQR Policy 1.1.1 is "..., allowing for the greatest amount of water to infiltrate the ground." Clearly the intent of this statement by the County means that they want to reduce the amount of stormwater runoff leaving the Prime Aquifer Recharge zone, thereby allowing the stormwater to infiltrate into the ground. By limiting the development to 10% the County is assuming that the other 90% of the stormwater will infiltrate back into the ground.

In stormwater design, we model the existing conditions of a development site to determine the amount of stormwater runoff in certain rainfall events. This modeling uses the slope of the land, the vegetative cover and condition of the project site. In the chart below you will see we have run the ICPR model for a 547 acre parcel that is relatively flat improved pasture land which is a very conservative assumption compared to fallow citrus groves. The rainfall events shown range from a 1" average daily rain to a 100 Year, 14" storm. You can see that even in the daily rains, over 1 million gallons will run off the site and into the drainage swales and ditches downstream while over 13 million gallons are absorbed into the ground. Considering the 100 year storm event, almost 169 million gallons will run off the site while 39 million gallons are absorbed.

By contrast, with the stormwater management system designed for Calusa Green, all 208 million gallons will be contained within the boundaries of the project site and forced to percolate back into the ground.

Storm Event	3Yr; 24-Hr	25Yr; 24-Hr	100-Yr; 72-Hr	1 inch
Amount of Rain (in)	4.25	7.25	14	1
Basin	547.07	547.07	547.07	547.07
CN	80	80	80	80
Tc	90	90	90	90
Runoff (in)	2.249	4.923	11.374	0.083
Runoff (cfs)	249.788	554.937	991.579	5.132
Runoff (Ft^3)	4,465,609	9,776,064	22,587,172	165,393
Runoff (gal)	33,404,991	73,129,844	168,963,337	1,237,222
Recharge Water				
inches	2.001	2.327	2.626	0.917
cubic feet	3,973,730	4,621,124	5,214,899	1,821,044
gallons	29,725,484	34,568,317	39,010,056	13,622,323
cfs per acre	0.46	1.01	1.81	0.01

In addition to the data stated above, we contacted the FDEP stormwater reviewer for solid waste management facilities for confirmation of the design approach used for landfills in regards to stormwater runoff. He confirmed that the finished landfill with the vegetated soil cap will absorb 3" to 4" of a rainfall event prior to experiencing runoff. And as required, that runoff is contained in the designed stormwater facility to be allowed to percolate back into the ground. Please see the FDEP correspondence below.

From: McLaurin, Albert [<mailto:Albert.McLaurin@dep.state.fl.us>]

Sent: Wednesday, August 15, 2012 3:41 PM

To: 'Gary Bayne'

Subject: RE: Calusa Green - Conversation

Mr. Bayne,

Basically, your understanding of our conversation is correct.

The final cover design of a landfill is to limit the amount of moisture getting into the waste and provide erosion control for the soil cover by use of a vegetative cover. The vegetative cover promotes surface water runoff and the vegetation uptakes moisture that may penetrate the vegetation/soil cover layer over the final cover geomembrane which provides the a barrier for moisture getting into the waste. The vegetation root zone is designed to not penetrate the geomembrane cover, as noted in your email. Any excess moisture that penetrates below the root zone of the vegetative cover is allowed to runoff via the final cover drainage layer into the landfill stormwater system. The stormwater calculations would be similar to the normal rule requirements. The landfill should be divided into basins and treated no different than a normal stormwater design.

Regards,

Albert D. McLaurin, P.E.
Acting Environmental Administrator
Florida Department of Environmental Protection
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Please take a few minutes to share your comments on the service you received from the department by clicking on this link [DEP Customer Survey](#).

From: Gary Bayne [<mailto:gbayne@sedfl.com>]

Sent: Wednesday, August 15, 2012 2:41 PM

To: McLaurin, Albert

Subject: Calusa Green - Conversation

Dear Al,

Thank you for speaking to me this morning and sharing your expertise in storm water management for landfill projects. As I understand our conversation, the landfill footprint is not considered "impervious" by definition (Charlotte County's definition - Impervious surface: A surface which has been compacted or covered with a layer of material so that it is highly resistant to infiltration by water. The term includes streets, roofs, sidewalks, parking lots and similar structures.) nor by storm water calculation due to the two feet of soil cover required to close and cap the landfill.

As we discussed the soil cover absorbs a certain amount of rainfall in the voids and supports the vegetative growth required on top of the hill. Due to the amount of percolation and the ability to support vegetative growth that is required by FDEP the finished landfill is not considered impervious and uses storm water design criteria similar to an open pasture with a clay layer underneath. Also the 2 feet of cover on top of the landfill will absorb approximately 3 to 4 inches rain depending on the rainfall intensity/event before producing runoff. As required for the design any storm water runoff produced by the landfill will need to be retained and treated on site in the storm water ponds to allow for percolation back into the groundwater table as required and set forth in the Environmental Resource Permitting process.

Please confirm that I have accurately summarized our conversation.

I appreciate the time you took to go over an overview of what we are to expect when submitting this project for FDEP review.

Sincerely,

Gary

Gary Bayne, President

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As discussed in the email correspondence above, the vegetative cover that will be placed over the landfill is a pervious surface which will capture stormwater and allow it to percolate into the cover layer. Stormwater not absorbed by the vegetative cover will ultimately run into and be captured by the project's stormwater management facility. This vegetative cover does not meet the definition of impervious surface contained in the 2050 Plan. Further, the stormwater management facility designed

for the proposed Calusa Green project will allow a greater amount of water to infiltrate the ground than the existing site conditions. Consequently, the project is consistent with AQR Policy 1.1.1 because it does not exceed the 10% impervious threshold and because it furthers the stated intent to allow the greatest amount of water to infiltrate the ground.